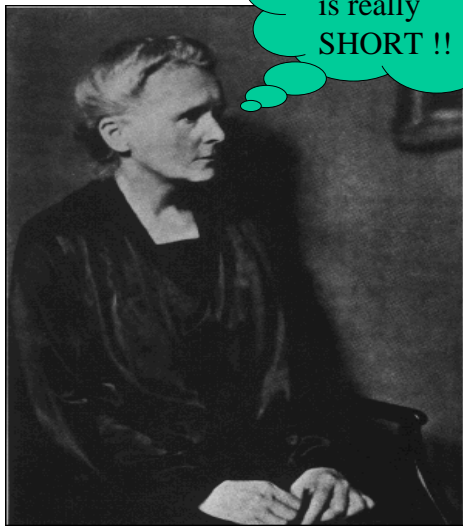


# Scientists that made contributions to Radioactivity

Henri  
Bequerel





Marie Curie

Hmm! Mrs. Watson  
is really  
SHORT !!

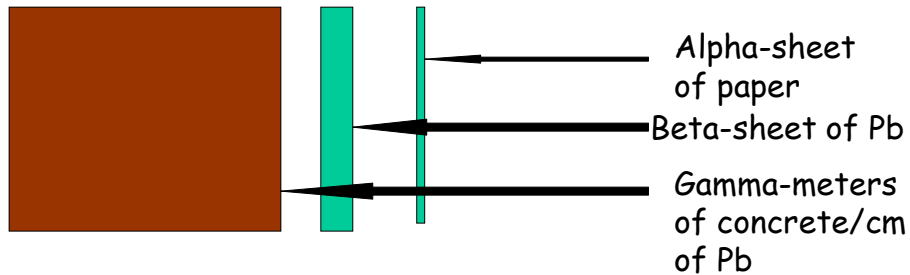
Bequerel noticed  
that uranium ores  
emitted invisible  
rays that exposed  
photographic plates.

Marie Curie named  
the process by which  
the uranium gives  
off rays  
**RADIOACTIVITY.**

Rutherford did experiments with  $e/m$   
(charge to mass ratio) and found three  
types of rays (or particles)

Ray	Charge	E/m (charge to mass ratio)	Nature	
$\alpha$	2 +	0.5	Helium ions	${}^4_2\text{He}$
$\beta$	1 -	1822	Electrons	${}^0_{1-}\text{e}$
$\gamma$	0	No deflection	Similar to xrays	High energy radiation

What does it take to stop radiation?



## Penetration Ability

### Speed:

5 to 10%	90%	Speed of light
$\alpha$	$\beta$	$\gamma$
slow	fast	very fast

Radiation is measured in:

rads-radiation absorbed dosage

1 rad is the same as the impact of 10 microjoules of energy per gram of living tissue.

Rem-damage done by 1 rad of x-rays

\*\*\*recommended Dose\*\*\*

General Public 0.5 rem per year

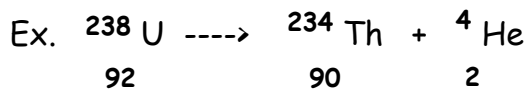
Radiation worker 5 rem per year

Leg x-ray 20 mrem = 0.020 rem

## Half-Life

In a nuclear reaction, one element is changed into another element when there is a change in the number of protons in the nucleus. "This is called a transmutation."

Transmutation continues until a stable element whose nucleus is not radioactive is produced.



When the Uranium-238 decays naturally a series of steps take place and eventually all of the transmutations lead to lead- 206 which is very stable.